

WHAT IS CLAIMED IS:

1. A refrigerator comprising:

a compressor for compressing coolant;

5 a condenser for condensing the coolant compressed by the compressor so that heat from the coolant passing through the condenser is emitted to air surrounding the condenser;

an expander for decompressing the coolant condensed by the condenser;

10 an evaporator for evaporating the coolant expanded by the expander so that the expanded coolant passing through the evaporator absorbs heat from air surrounding the evaporator;

a blowing fan for blowing the air cooled by the evaporator to a freezing chamber of the refrigerator or a 15 refrigerating chamber of the refrigerator and blowing the cool air in the freezing chamber or the refrigerating chamber to the vicinity of the evaporator so that the cool air is circulated in the refrigerator;

20 a rapid cooling chamber mounted in at least one of the freezing and refrigerating chambers;

a rapid cooling channel having one end communicating with an entering channel of the refrigerating chamber and the other end communicating with the rapid cooling channel;

25 a damper for controlling the flow of cool air passing through the entering channel of the refrigerating chamber and

the rapid cooling channel;

a first load sensing sensor for sensing a load in the freezing chamber or the refrigerating chamber;

a second load sensing sensor for sensing a load in the 5 rapid cooling chamber; and

a controller for controlling the compressor, the blowing fan, and the damper on the basis of signals outputted from the first load sensing sensor and the second load sensing sensor.

10 2. The refrigerator as set forth in claim 1, wherein the rapid cooling chamber comprises:

a rapid cooling panel attached to the freezing chamber or the refrigerating chamber, the rapid cooling panel having a stored goods receiving space defined therein and a stored 15 goods entrance formed at the front part thereof; and

a lid pivotably attached to the rapid cooling panel for closing the stored good entrance of the rapid cooling panel.

20 3. The refrigerator as set forth in claim 2, further comprising guides for facilitating the attachment of the rapid cooling panel to the freezing chamber or the refrigerating chamber.

25 4. The refrigerator as set forth in claim 1, further comprising a barrier disposed between the freezing chamber and

the refrigerating chamber so that the freezing chamber and the refrigerating chamber are separated from each other, the barrier having the entering channel of the refrigerating chamber formed therein,

5           wherein the rapid cooling channel is formed in the barrier.

10           5. The refrigerator as set forth in claim 1, wherein the second load sensing sensor is an infrared sensor disposed facing the interior of the rapid cooling chamber.

6. A refrigerator comprising:

15           a compressor for compressing coolant;

15           a condenser for condensing the coolant compressed by the compressor so that heat from the coolant passing through the condenser is emitted to air surrounding the condenser;

20           an expander for decompressing the coolant condensed by the condenser;

20           an evaporator for evaporating the coolant expanded by the expander so that the expanded coolant passing through the evaporator absorbs heat from air surrounding the evaporator;

25           a first blowing fan for blowing the air cooled by the evaporator to a freezing chamber of the refrigerator or a refrigerating chamber of the refrigerator and blowing the cool air in the freezing chamber or the refrigerating chamber to

the vicinity of the evaporator so that the cool air is circulated in the refrigerator;

5 a rapid cooling chamber mounted in the refrigerating chamber;

10 a rapid cooling channel having one end communicating with the freezing chamber and the other end communicating with the rapid cooling channel;

a second blowing fan for blowing the cool air in the freezing chamber to the rapid cooling chamber;

15 a first load sensing sensor for sensing a load in the freezing chamber or the refrigerating chamber;

a second load sensing sensor for sensing a load in the rapid cooling chamber; and

20 a controller for controlling the compressor, the first blowing fan, and the second blowing fan on the basis of signals outputted from the first load sensing sensor and the second load sensing sensor.

7. The refrigerator as set forth in claim 6, wherein the rapid cooling chamber comprises:

25 a rapid cooling panel attached to the refrigerating chamber, the rapid cooling panel having a stored goods receiving space defined therein and a stored goods entrance formed at the front part thereof; and

a lid pivotably attached to the rapid cooling panel for

closing the stored good entrance of the rapid cooling panel.

8. The refrigerator as set forth in claim 7, further comprising guides for facilitating the attachment of the rapid 5 cooling panel to the refrigerating chamber.

9. The refrigerator as set forth in claim 6, further comprising a barrier disposed between the freezing chamber and the refrigerating chamber so that the freezing chamber and the 10 refrigerating chamber are separated from each other, the barrier having an entering channel of the refrigerating chamber formed therein,

wherein the rapid cooling channel is formed in the barrier.

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10. The refrigerator as set forth in claim 6, wherein the second load sensing sensor is an infrared sensor disposed facing the interior of the rapid cooling chamber.

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11. A refrigerator comprising:  
a compressor for compressing coolant;  
a condenser for condensing the coolant compressed by the compressor so that heat from the coolant passing through the condenser is emitted to air surrounding the condenser;

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an expander for decompressing the coolant condensed by

the condenser;

an evaporator for evaporating the coolant expanded by the expander so that the expanded coolant passing through the evaporator absorbs heat from air surrounding the evaporator;

5 a blowing fan for blowing the air cooled by the evaporator to a freezing chamber of the refrigerator or a refrigerating chamber of the refrigerator and blowing the cool air in the freezing chamber or the refrigerating chamber to the vicinity of the evaporator so that the cool air is  
10 circulated in the refrigerator;

a rapid cooling chamber mounted in at least one of the freezing and refrigerating chambers;

15 a rapid cooling channel having one end communicating with an entering channel of the refrigerating chamber and the other end communicating with the rapid cooling channel;

a damper for controlling the flow of cool air passing through the entering channel of the refrigerating chamber and the rapid cooling channel;

20 a load sensing sensor for sensing a load in the freezing chamber or the refrigerating chamber;

a load-based cooling module for sensing a load in the rapid cooling chamber and supplying the cool air guided along the rapid cooling channel to the sensed load; and

25 a controller for controlling the compressor, the blowing fan, the damper, and the load-based cooling module on the

basis of signals outputted from the load sensing sensor and the load-based cooling module.

12. The refrigerator as set forth in claim 11, wherein  
5 the rapid cooling chamber comprises:

a rapid cooling panel attached to the freezing chamber or the refrigerating chamber, the rapid cooling panel having a stored goods receiving space defined therein and a stored goods entrance formed at the front part thereof; and

10 a lid pivotably attached to the rapid cooling panel for closing the stored good entrance of the rapid cooling panel.

13. The refrigerator as set forth in claim 12, further comprising guides for facilitating the attachment of the rapid cooling panel to the freezing chamber or the refrigerating chamber.  
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14. The refrigerator as set forth in claim 11, further comprising a barrier disposed between the freezing chamber and the refrigerating chamber so that the freezing chamber and the refrigerating chamber are separated from each other, the barrier having the entering channel of the refrigerating chamber formed therein,  
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25 wherein the rapid cooling channel is formed in the barrier.

15. The refrigerator as set forth in claim 11, wherein the load-based cooling module is attached to the barrier while facing the interior of the rapid cooling chamber

5 16. The refrigerator as set forth in claim 11, wherein the load-based cooling module comprises:

a module case attached to the barrier;

a motor mounted in the module case;

10 a nozzle connected to the motor, the nozzle having an inlet communicating with the rapid cooling channel and an outlet communicating with the rapid cooling chamber; and

an infrared sensor mounted at a side of the nozzle for scanning the interior of the rapid cooling chamber to sense the location and the temperature of the load.

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17. A method of controlling a refrigerator, comprising:

a first step of sensing a load in a freezing chamber or a refrigerating chamber of the refrigerator;

20 a second step of sensing a load in a rapid cooling chamber mounted in the freezing chamber or the refrigerating chamber for rapidly cooling stored goods;

a third step of determining whether cool air is to be supplied to the refrigerating chamber and the rapid cooling chamber on the basis of the sensed results at the first and second steps; and

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a fourth step of controlling a damper for controlling the flow of cool air supplying to the refrigerating chamber or the rapid cooling chamber on the basis of the determined result at the third step.

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18. The method as set forth in claim 17, wherein the fourth step comprises shifting the damper to a position where the cool air is not introduced into the refrigerating chamber or the rapid cooling chamber, when the load in the freezing or 10 refrigerating chamber sensed at the first step is below a first predetermined value, and when the load in the rapid cooling chamber sensed at the second step is below a second predetermined value.

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19. The method as set forth in claim 17, wherein the fourth step comprises shifting the damper to a position where the cool air is introduced into the refrigerating chamber, when the load in the freezing or refrigerating chamber sensed at the first step is not less than a first predetermined 20 value, and when the load in the rapid cooling chamber sensed at the second step is below a second predetermined value.

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20. The method as set forth in claim 17, wherein the fourth step comprises shifting the damper to a position where the cool air is introduced into the rapid cooling chamber,

when the load in the freezing or refrigerating chamber sensed at the first step is below a first predetermined value, and when the load in the rapid cooling chamber sensed at the second step is not less than a second predetermined value.

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21. The method as set forth in claim 17, wherein the fourth step comprises alternately shifting the damper to a position where the cool air is introduced into the refrigerating chamber and to another position where the cool air is introduced into the rapid cooling chamber, when the load in the freezing or refrigerating chamber sensed at the first step is not less than a first predetermined value, and when the load in the rapid cooling chamber sensed at the second step is not less than a second predetermined value.

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22. A method of controlling a refrigerator, comprising:  
a first step of sensing a load in a freezing chamber or a refrigerating chamber of the refrigerator;  
a second step of sensing a load in a rapid cooling chamber mounted in the refrigerating chamber for rapidly cooling stored goods;  
a third step of determining whether cool air is to be supplied to the freezing or refrigerating chamber and the rapid cooling chamber on the basis of the sensed results at the first and second steps; and

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5 a fourth step of controlling a first blowing fan for blowing cool air to the freezing and refrigerating chambers and a second blowing fan for blowing cool air to the rapid cooling chamber on the basis of the determined result at the third step.

10 23. The method as set forth in claim 22, wherein the fourth step comprises operating the first blowing fan, when the load in the freezing or refrigerating chamber sensed at the first step is not less than a first predetermined value.

15 24. The method as set forth in claim 22, wherein the fourth step comprises operating the second blowing fan, when the load in the rapid cooling chamber sensed at the second step is not less than a first predetermined value.

20 25. A method of controlling a refrigerator, comprising:  
a first step of sensing a load in a freezing chamber or a refrigerating chamber of the refrigerator;  
a second step of sensing a load in a rapid cooling chamber mounted in the freezing chamber or the refrigerating chamber for rapidly cooling stored goods;  
a third step of determining whether cool air is to be supplied to the freezing or refrigerating chamber on the basis 25 of the sensed result at the first step, determining whether

cool air is to be supplied to the rapid cooling chamber on the basis of the sensed result at the second step, and determining the direction of supply of the cool air if it is determined that the cool air is to be supplied to any one of the freezing or refrigerating chamber and the rapid cooling chamber; and

5 a fourth step of controlling a blowing fan for blowing cool air to the freezing and refrigerating chambers, a damper for controlling the flow of cool air supplying to the refrigerating chamber or the rapid cooling chamber, and a nozzle for supplying cool air to the rapid cooling chamber on the basis of the determined result at the third step.

10 26. The method as set forth in claim 25, wherein the second step comprises rotating the nozzle so that an infrared sensor mounted to the nozzle scans the interior of the rapid cooling chamber to sense the location and the temperature of the load in the rapid cooling chamber, when a door of the freezing or refrigerating chamber is closed again after it is opened.

20 27. The method as set forth in claim 25, wherein the fourth step comprises shifting the damper to a position where the cool air is not introduced into the refrigerating chamber or the rapid cooling chamber and closing the nozzle, when the 25 load sensed at the first step is below a first predetermined

value, and when no load is sensed at the second step or the load sensed at the second step is below a second predetermined value.

5           28. The method as set forth in claim 25, wherein the fourth step comprises operating the blowing fan, shifting the damper to a position where the cool air is introduced into the rapid cooling chamber, and rotating the nozzle so that the nozzle faces the sensed load, when the load sensed at the 10 first step is below a first predetermined value, and when the load is sensed at the second step and the load sensed at the second step is not less than a second predetermined value.

15           29. The method as set forth in claim 25, wherein the fourth step comprises operating the blowing fan, shifting the damper to a position where the cool air is introduced into the refrigerating chamber, and closing the nozzle, when the load sensed at the first step is not less than a first predetermined value, and when no load is sensed at the second 20 step or the load sensed at the second step is below a second predetermined value.

25           30. The method as set forth in claim 25, wherein the fourth step comprises operating the blowing fan, alternately shifting the damper to a position where the cool air is

introduced into the refrigerating chamber and to another position where the cool air is introduced into the rapid cooling chamber, and rotating the nozzle so that the nozzle faces the sensed load, when the load sensed at the first step  
5 is not less than a first predetermined value, and when the load is sensed at the second step and the load sensed at the second step is not less than a second predetermined value.

10 31. The method as set forth in claim 30, wherein the blowing fan is rotated at high speed.